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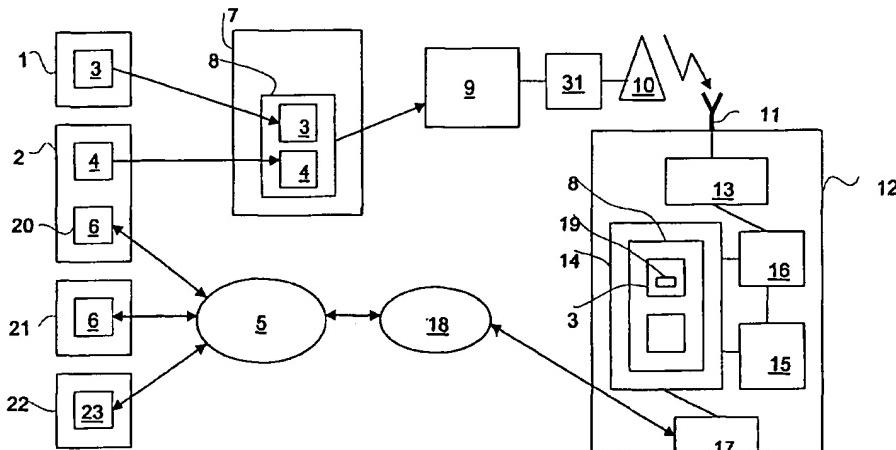
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(54) Title: A WIRELESS TERMINAL FOR RECEIVING INFORMATION FROM A BROADCASTING SYSTEM, DISPLAYING BROADCAST INFORMATION AND INITIATING A BI-DIRECTIONAL COMMUNICATION LINK WITH A COMPUTER NETWORK



(57) Abstract: The invention relates to a method for providing information to a terminal (12), comprising the steps of: broadcasting an electronic interactive broadcast information page (8) from at least one digital wireless broadcasting system (3!), receiving and decoding the broadcast information page in the terminal, displaying the broadcast information page in the terminal, requesting additional information (6, 23) being accessible on a computer network (5) by initiating a bidirectional wireless communication between the terminal and the computer network through a wireless communication system (18), transmitting the additional information from the computer network to the terminal through the wireless communication system, and displaying the additional information in the terminal. The invention also relates to a system, the terminal, a message computer program (16) and a message computer program product (28).

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"A wireless terminal for receiving information from a broadcasting system, displaying broadcast information and initiating a bi-directional communication link with a computer network"

- 5 The present invention relates to a method for providing information to a terminal, a system used when performing the method, a terminal used when performing the method, a message computer program installed in the terminal and a computer program product that comprises the message computer program.

10 Definitions

Throughout this description and the following claims and abstract, a terminal is defined as a device that enables communication with a computer, and a page is defined as a document having an address in a computer network.

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Description of Related Art

It is possible to access the internet with handheld wireless devices such as mobile phones through a wireless telephone network. Unfortunately a mobile telephone system used today has a relatively narrow bandwidth, i.e. the information transfer rate capacity is fairly low as its main purpose is to bidirectionally transfer speech, which does not require high transfer rates.

20 WO-99/33076-A1 discloses a method for transferring information from an information provider to a terminal. The information is transmitted by means of a digital video broadcasting system (DVB system) to a video broadcasting receiver installed in the terminal. Thereby a system that allows a much higher transfer rate than the mobile telephone system may be used to send information to a receiving terminal. The information transfer from the DVB system is supported by a secondary bidirectional communication network, such as the GSM (Global System for Mobile communication), where the terminal provides information of where the terminal is

positioned through the bidirectional communication network. Thereby is achieved that only suitable DVB transmitters in an area are used for the information transmission, which gives an efficient use of the DVB system. Although requests for more information could be sent from the terminal over the bidirectional communication network to a service provider, the requested information is always sent via the DVB system and information given from the user of the terminal, such as the name and post address of the user, could not be sent to a computer in the internet. No method is disclosed for designing an interactive information page with URL (Uniform Resource Locator) to an e-business or information application, i.e. an e-business or information computer program or programs designed for end users, or pages that is sent through a bidirectional communication network. Furthermore, a handling, storing and displaying of the incoming information from the DVB system to the terminal is not discussed.

### Summary

15 It is therefore a first object of the present invention to provide a method and system where interactive e-business or information applications or pages are sent through a digital broadcasting system or through a wireless communication network. Thereby a method is achieved, which provides a wireless communication with a wider bandwidth than the access systems used today.

A second object of the invention is to provide a method and a system where both requests and information given by the user of a terminal could be sent to a server in a global computer network, such as the WWW (World Wide Web).

25 A third object of the present invention is to provide a method where several electronic interactive information pages are put together into a second information page, which is broadcast by a digital broadcasting system and hereinafter is referred to as the broadcast information page.

A fourth object of the invention is to provide a method and a computer program that display a message that broadcast information has been received by the terminal and allow the user to decide whether the information shall be displayed directly after an answer to the message has been given or at another time when the user wants to see  
5 the broadcast information.

A fifth object of the invention is to provide a method and system that enables a user of a terminal to request additional information from a presentation means when the broadcast information page is displayed in the terminal.

10 A sixth object of the invention is to provide a method and system where a copy of an e-business or information application is provided in the broadcast information page, so that a user of a terminal is able to request the e-business or information application either from a computer network or from the copy being comprised in the broadcast  
15 information page.

The invention therefore provides a method for providing information to a terminal, comprising the steps of:

20 creating at least one first interactive information page,  
creating an interactive broadcast information page, which comprises at least a part of the at least one first interactive information page,  
sending the broadcast information page to at least one digital wireless broadcasting system, and  
broadcasting the broadcast information page from the at least one digital wireless  
25 broadcasting system.

Hereby the first and the third object of the invention are achieved.

Suitably the method also comprises the steps of:

30 broadcasting the broadcast information page from the at least one digital wireless broadcasting system at least once more,  
receiving and decoding the broadcast information page in the terminal,

- displaying the broadcast information page in the terminal,  
requesting additional information being accessible on a computer network by  
initiating a bidirectional wireless communication between the terminal and the  
computer network through a wireless communication system,  
5 transmitting the additional information from the computer network to the terminal  
through the wireless communication system,  
displaying the additional information in the terminal,  
storing the broadcast information page in the terminal,  
displaying a graphic window that enables a user of the terminal to choose from  
10 displaying the broadcast information page directly after the graphic window is  
closed by the user or at another occasion by request from the user, and  
closing the graphic window.

Hereby the second and the fourth object of the invention are achieved.

- 15 Preferably the broadcast information page comprises at least one URL to an e-business  
computer program means, information computer program means or a second  
information page comprised in the computer network. Hereby the fifth object of the  
invention is achieved.
- 20 The broadcast information page could also comprise a copy of at least a subset of the  
e-business computer program means, information computer program means or second  
information page. The broadcast information page may also comprise a URL to the  
copy. Hereby the sixth object of the invention is achieved.
- 25 Suitably, the digital wireless broadcasting system is a DAB system (Digital Audio  
Broadcasting system), a DVB-T system (Digital Video Broadcasting-Terrestrial  
system) or a DVB-S system (Digital Video Broadcasting – Satellite). Hereby is  
achieved that an efficient broadcast system for information transmission is used  
instead of a telephone network, which has a relatively low transfer rate of information,  
30 and that the telephone network only has to transmit a less quantity of information.

The terminal is, for example, a personal digital assistant, portable computer, a mobile phone or a fixed terminal and the bidirectional wireless communication system is suitably a packet-oriented digital cellular communication system, such as a GPRS system (General Packet Radio Service system) or an UMTS (Universal Mobile

- 5    Telecommunications system).

The invention also provides a system that is used for carrying out the method above.

The system comprises at least one digital broadcasting system, at least one wireless communication network, the interactive broadcast information page, a server on the

- 10    computer network and the terminal. Preferably, the server is an HTTP server (Hyper Text Transfer Protocol server) in the WWW, but could also be an FTP server (File Transfer Protocol server).

The terminal comprises receiver means adapted for receiving and decoding

- 15    information from at least one digital broadcasting system, at least one presentation means, a display means and a bidirectional communication link, which is adapted for the bidirectional communication with the computer network through the wireless communication network, the presentation means being connected to the receiver means for enabling reception of information from the receiver means and enabling  
20    displaying of the broadcast information page in the display means, and wherein the presentation means also is connected to the bidirectional communication link for enabling reception of additional information from the computer network to the terminal through the wireless communication network.

- 25    In order to suit an HTTP server, the presentation means is preferably a web browser, which also allows communication with an FTP server.

Moreover, the terminal may also comprise a message means for displaying a graphic window that enables the user of the terminal to choose from displaying the broadcast

- 30    information page directly after that the window is closed by the user or at another occasion by request from the user.

- The message means is preferably a message computer program intended to be installed in the terminal. The message computer program comprises computer readable code means for causing the terminal to display the graphic window that enables the user of
- 5 the terminal to choose from displaying the broadcast information page, which is received by the terminal from the digital broadcasting system, directly after the window is closed by the user of the terminal or at another occasion by request from the user; and computer readable code means for causing the terminal to activate the presentation means for displaying the broadcast information page.
- 10 Furthermore, the invention also provides a computer program product comprising a computer useable medium and the message computer program, which is recorded on the computer useable medium.

15 Brief Description of the Drawings

The objects, advantages and effects as well as features of the present invention will be more readily understood from the following detailed description of a preferred method, as well as embodiments, when read together with the accompanying drawings, in

20 which:

Fig. 1 shows an explanatory diagram of a method and the main components of the invention,

Fig. 2 shows a schematic diagram of a terminal according to the invention,

Fig. 3 shows a flow diagram of a part of the preferred method according to the

25 invention, and

Fig. 4 shows a schematic diagram of a second embodiment of a broadcast information page and its relation to a business or information application.

Detailed Description of Embodiments

While the invention covers various modifications and alternative constructions, preferred embodiments of the invention are shown in the drawings and will hereinafter be described in detail. It is to be understood, however, that the specific description and drawings are not intended to limit the invention to the specific forms disclosed. On the contrary, it is intended that the scope of the claimed invention includes all modifications and alternative methods thereof falling within the spirit and scope of the invention as expressed in the appended claims to the full range of their equivalents.

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Fig. 1 shows two so-called content providers, 1 and 2 respectively, for example so-called e-business companies or advertising agencies. The content providers 1, 2, create electronic interactive first information pages 3 and 4 respectively. These first information pages 3, 4, are here Hyper Text Markup Language (HTML) web pages comprising a URL on the WWW 5 to a business or information application 6.

The content providers 1, 2, send the first information pages 3, 4 to a Service Provider 7 that put together a quantity of information that comprises information with the URL to the business or information application 6 from at least one of the first information pages 3, 4. The quantity of information may consist of both at least one electronic interactive broadcast information page 8 and ordinary public information, such as news distributed as an electronic broadcast newspaper.

The quantity of information is sent to a Network Service Provider (NSP) 9. Here the quantity of information is multiplexed into at least one channel of a digital broadcasting system or systems 31, for example the DAB standard, the Advanced Television Systems Committee standard (ATSC) or DVB standards such as DVB-T and DVB-S. Modulation methods may for example be Coded Orthogonal Frequency Division Multiplex (COFDM), Vestigial Side Band Modulation (8 VSB) or Quadrature Phase Shift Keying (QPSK).

- The multiplexed quantity of information is then broadcast by a broadcasting antenna 10 to receivers in a corresponding broadcasting network, such as a DVB-T network. This is preferably done at least twice. The multiplexed quantity of information is received by a receiving antenna 11 comprised in a terminal 12, such as a personal digital assistant, a laptop or a fixed terminal. The receiving antenna 11 is connected to a receiver means 13, which receives and decodes the quantity of information, in the terminal 12 for at least one of the digital broadcasting systems 31 in which the quantity of information is sent. The decoded quantity of information is sent to a presentation means 14, which is comprised in the terminal 12. The presentation means 14 is a computer program means designed for end users, i.e. a presentation application, for displaying the quantity of information with the help of a display means 15, such as a Liquid Crystal Display (LCD). Preferably, the presentation means 14 is a web browser, i.e. a computer program means for locating and displaying web pages. A user of the terminal 12 is now able to read the presented quantity of information, which in this example contains the broadcast information page 8 that comprises at least one URL to a business or information application 6 on the WWW 5. The presentation means 14 is preferably connected to a message means 16, whose functions and interaction with the presentation means 14 will be described later.
- The presentation means 14 is also connected to a bidirectional communication link 17, which also is comprised in the terminal 12. The bidirectional communication link 17 enables the presentation means 14 to communicate in both directions with HTTP servers located on the WWW 5 through a wireless communication network 18 provided by for instance a mobile telephony service provider. The wireless communication network 18 may use a system such as the GPRS or the Universal Mobile Telecommunication System UMTS. Through this connection of the presentation means 14 with the WWW 5, the user of the terminal 12 is able to start the business or information application 6 by activating a link between the presentation means 14 and the business or information application 6. This is for example done by clicking on a virtual button 19 in the displayed broadcast information page 8. The click initiate a request, such as a 'GET URL' command, for communicating with an HTTP

- server comprising the requested business or information application 6 and is associated with the URL connected by the button 19. The HTTP server may be provided by one or more of the content providers 1, 2, such as an HTTP server 20 or positioned at some other place connected to the WWW 5, such as the HTTP server 21. The requested
- 5 business or information application 6 transmit information to the terminal 12 in response to the request, and the presentation means 14 displays the information in the display means 15. The user may now send information data or further requests to and/or receive more applications or information from servers on the WWW 5 via the wireless communication network 18 in a similar manner as described above.
- 10 In the example above, the button 19 could of course also be associated with a URL to a FTP server 22 on the WWW 5 for requesting a file 23 or files comprised in the FTP-server 22.
- 15 Fig. 2 is a schematic diagram that shows the user terminal 12, which comprises the receiving antenna 11, the receiver means 13, the display means 15 and the both-way communication link 17. The receiver means 13 is connected to a central processing unit (CPU) 24 via a first bus 25 and the CPU 24 is connected to the display means 15 and the both-way communication link 17 via a second bus 26 and a third bus 27 respectively. The CPU 24 is also connected to a computer readable medium (CRM) 28 through a fourth bus 29. The CRM 28 comprises the presentation means 14, the message means 16, which is a computer program, a driver 30 and a memory for storing e.g. the broadcast information page 8, if it is desired. Although not shown in the figures, the terminal could of course comprise a high-speed storage mechanism, 25 such as a cache, to speed up the processing.

Having described a method as well as the principal components involved in the invention, the part of the method that involves the terminal 12 and its means will now be described more thoroughly in connection with Fig. 3.

The first step, S1, is the receiving of electromagnetic waves, such as radio waves, from the broadcasting antenna 10 to the receiving antenna 11. The receiving antenna 11 transmits the electrical energy from the electromagnetic waves to the receiver means 13, which comprises conventional devices, such as a filter and a mixer, for at least one broadcasting standard and is not described more, since these devices are known to a person skilled in the art. The decoding is done in step S2, and although it is not shown in Fig. 2, the decoding means could also be a computer program means installed in the CRM 28 or some other computer readable medium installed in the terminal 12. Such computer program means are known to a person skilled in the art and will not be described more in detail.

The information data comprising the broadcast information page 8 is then stored in the CRM 28. At essentially the same time as the storing of the broadcast information page 8 starts, the message means 16 is activated. The storing and activation of the message means is done in step S3.

In step S4, a graphic window with text and reply buttons is activated automatically by the message means 16. The window comprises a text that informs the user that the broadcast information page 8 has been received and asks the user of the terminal 12 to make a choice whether the broadcast information page 8 shall be displayed at once or not. A third option could be that the storing of the broadcast information page 8 shall end, i.e. not be stored in the CRM 28. A choice is made by pushing a virtual button comprised in the window, each button resembling an answer. If the user chooses the third option, then step S5 starts, in which the storing is stopped, the window disappears and the already stored information in the CRM 28 is deleted. If the button for a request to see the broadcast information page 8 later is pushed, then step S6 starts, in which the window disappears from the display means, but the storing of the broadcast information page 8 is continued. Step S7 is started if the button for a request to see the broadcast information page 8 at once is pushed. In step S7, the presentation means 14 is activated and the presentation means 14 gets and displays the broadcast information page 8 from the CRM 28 or from the receiver means 13 via the CPU 24 without being

stored in the CRM 28 in advance. The broadcast information page 8 is also stored in step S7.

The user is now able to read the broadcast information page 8. In step S8, the user 5 sends a request to activate the business or information application 6 comprised in the server 20 or 21 by pushing the virtual button 19 in the displayed broadcast information page 8. The presentation means 14 thereafter sends the request through the bidirectional communication link 17 and the wireless communication network 18 to the server 20 or 21 on the WWW 5 in a way described above.

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Step S9 involves the reception and the displaying of the requested business or information application 6 sent to the presentation means 14 from the server associated with the requested URL.

15 The user is now able to send another request by activating another link to a URL in the broadcast information page 8 or in the business or information application 6, thus activating another business or information page. The user may also type information in response to the business or information application 6, e.g. the user's name and address, in order to, for example, make a reservation at a restaurant. These requests and 20 information transmissions through the wireless communication network 18 could of course be transmitted as long as the user wants, and they are represented by step S10.

The presentation means 14 may be active as long as the terminal is on, but in order to save energy and CPU work load, the presentation means 14 may be closed by the user 25 in step S11. Alternatively, the closure of the presentation means 14 may be set to a certain time after the last transmission between a server and the presentation means 14.

In step S12, which is initiated at a time after step S6, the user starts the presentation means 14, which in one method according to the invention automatically will display 30 the latest stored information page received by the terminal 12 from the broadcasting

system 31. If the latest received information page is the broadcast information page 8, the user has come to the step S8, which was described above.

Instead of, as in the step S3, activating the message means 16 substantially at the same time as the CPU 24 starts to store the broadcast information page 8 in the CRM 28, the message means 16 may be activated after the whole broadcast information page 8 has been stored or before the broadcast information page 8 is transmitted to the CRM 28. The message means 15 may also be a computer program means that check the CRM 28 at regular intervals whether there is a new information page stored therein or not, or 10 a computer program means that always is active and substantially constantly check for incoming information pages. Alternatively, the message means 16 could be a loop construction in the presentation means 14, which in that case must not be closed in order to get the advantage of early attention to new information pages. Another embodiment of the terminal may not comprise the message means 16, and the 15 presentation means 14 is in that case preferably activated automatically at the reception of a new information page from the broadcasting system 31.

A second embodiment of the broadcast information page 8 is schematically shown in Fig. 4. As the embodiment shown in Fig. 1, this broadcast information page 8 also 20 comprises at least a part of the first information pages 3, 4 with at least one link to the business or information application 6 provided via the WWW 5. This is illustrated by the dashed arrow 32. But in addition to this, the second embodiment of the broadcast information page 8 comprises a copy 33 of at least a subset 34 of the business or information application 6. The copy 33 is not displayed by the presentation means 14, 25 but could be requested and displayed by activating a link 35 to the copy in the broadcast information page 8. The link 35 may be activated by pushing a virtual button, picture or text that also indicates that the associated URL leads to the copy, and not to the information application 6 in one of the HTTP servers 20 and 21. An example of an indication that the link 35 leads to the copy 33 is a certain kind of colour or 30 image. If the copy 33 only is a subset 34 of the business or information application 6, the displayed information of the copy 33 may have links 36 to other parts 37 of the

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business or information application 6 provided by the HTTP servers 20 and 21. Hence a user of the terminal 12 is able to request the information that is included in the local copy 33 from either the local copy 33 or from the business or information application 6 in one of the HTTP servers 20, 21, via the wireless communication network 18.

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Claims

1. A method for providing information to a terminal (12), comprising the steps of:
  - 5 creating at least one first interactive information page (3, 4),
  - creating an interactive broadcast information page (8), which comprises at least a part of said at least one first interactive information page (3, 4),
  - 10 sending said broadcast information page (8) to at least one digital wireless broadcasting system (31), and
  - broadcasting said broadcast information page (8) from said at least one digital wireless broadcasting system (31).
2. A method according to claim 1, comprising the steps of:
  - 15 receiving and decoding said broadcast information page (8) in said terminal (12),
  - displaying said broadcast information page (8) in said terminal (12),
  - requesting additional information (6, 23) being accessible on a computer network (5) by initiating a bidirectional wireless communication between said terminal (12) and said computer network (5) through a wireless communication system (18),
  - transmitting said additional information (6, 23) from said computer network (5) to said terminal (12) through said wireless communication system (18), and
  - 20 displaying said additional information (6, 23) in said terminal (12).
3. A method according to claim 2, comprising the steps of:
  - 25 storing said broadcast information page (8) in said terminal (12),
  - displaying a graphic window that enables a user of said terminal (12) to choose from displaying said broadcast information page (8) directly after said graphic window is closed by said user or at another occasion by request from said user, and
  - closing said graphic window.
4. A method according to anyone of the preceding claims, wherein said broadcast information page (8) comprises a copy (33) of at least a subset (34) of an e-business computer program means, information computer program means or

second information page comprised in said computer network (5), and said broadcast information page (8) comprises a URL to said copy (33).

5. A method according to anyone of claims 1-3, wherein said broadcast information page (8) comprises at least one URL to an e-business computer program means, information computer program means (6) or a second information page comprised in said computer network (5).
10. 6. A method according to claim 5, wherein said broadcast information page (8) comprises a copy (33) of at least a subset (34) of said e-business computer program means, information computer program means or second information page and said broadcast information page (8) comprises a URL to said copy (33).
15. 7. A method according to anyone of the preceding claims, wherein said digital wireless broadcasting system (31) is a DAB system, a DVB-T system or a DVB-S system.
20. 8. A method according to anyone of the preceding claims, wherein said terminal (12) is a personal digital assistant, portable computer, a mobile phone or a fixed terminal.
25. 9. A method according to anyone of claim 2-8, wherein said bidirectional wireless communication system (18) is a packet-oriented digital cellular communication system, such as a GPRS system or an UMTS.
10. A method according to anyone of the preceding claims, comprising the step of broadcasting said broadcast information page (8) from said at least one digital wireless broadcasting system (31) at least once more.
30. 11. A system used in a method according to claim 2, comprising at least one digital broadcasting system (31), at least one wireless communication network (18), at

least one interactive broadcast information page (8), at least one server on a computer network (5) and a terminal (12), which comprises a receiver means (13) for broadcast information from said broadcasting system (31), at least one bidirectional communication link (17) and at least one presentation means (14) for displaying said at least one broadcast information page (8) and additional information (6, 23) sent from said computer network (5) through said at least one wireless communication network (18).

- 5
- 10 12. A system according to claim 11, wherein said at least one digital broadcasting system (31) is a DAB system, a DVB-T system or a DVB-S system.
- 15 13. A system according to claim 11 or 12, wherein said at least one wireless communication network (18) is a packet-oriented digital cellular communication system, such as a GPRS-system or an UMTS.
- 20 14. A method according to anyone of claims 11-13, wherein said at least one broadcast information page (8) comprises a copy (33) of at least a subset (34) of an e-business computer program means, information computer program means or second information page comprised in said computer network (5), and said at least one broadcast information page (8) comprises a URL to said copy (33).
- 25 15. A system according to anyone of claims 11-13, wherein said at least one broadcast information page (8) comprises at least one URL to an e-business computer program means, information computer program means or a second information page comprised in said computer network (5).
- 30 16. A method according to claim 15, wherein said at least one broadcast information page (8) comprises a copy (33) of at least a subset (34) of said e-business computer program means, information computer program means or second information page and said at least one broadcast information page (8) comprises a URL to said copy (33).

17. A system according to anyone of claims 11-16, wherein said at least one server is an HTTP server (20, 21) or an FTP server (22).

5 18. A system according to anyone of claims 11-17, wherein said at least one presentation means (14) is a web browser.

10 19. A system according to anyone of claims 11-18, wherein said terminal (12) comprises a message means (16) for displaying a graphic window that enables a user of said terminal (12) to choose from displaying said at least one broadcast information page (8) directly after that said window is closed by said user or at another occasion by request from said user.

15 20. A terminal (12) used in a method according to claim 2, comprising a receiver means (13) adapted for receiving and decoding information from at least one digital broadcasting system (31), at least one presentation means (14), a display means (15) and at least one bidirectional communication link (17), which is adapted for a bidirectional communication with a computer network (5) through at least one wireless communication network (18), said at least one presentation means (14) being connected to said receiver means (13) for enabling reception of information from said receiver means (13) and enabling displaying of a broadcast information page (8) in said display means (15), and wherein said at least one presentation means (14) also is connected to said at least one bidirectional communication link (17) for enabling reception of additional information (6, 23) 20 from said computer network (5) to said terminal (12) through said at least one wireless communication network (18).

21. A terminal (12) according to claim 20, where said at least one presentation means (14) is a web browser.

22. A terminal (12) according to claim 20 or 21, comprising a message means (16) for displaying a graphic window that enables a user of said terminal (12) to choose from displaying said broadcast information page (8) directly after that said window is closed by said user or at another occasion by request from said user.

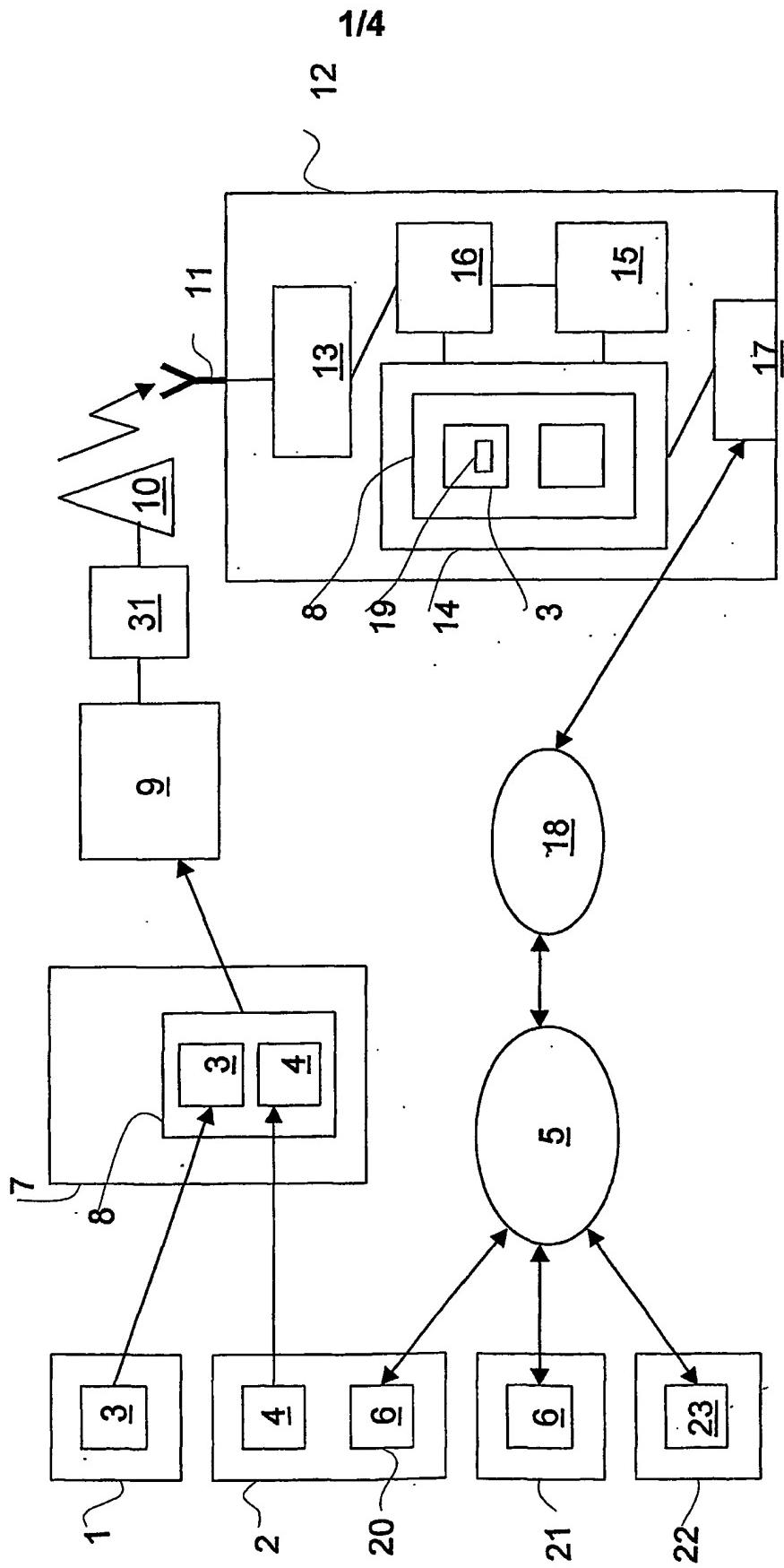
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23. A message computer program (16) intended to be installed in a terminal (12) used in a method according to claim 2, comprising computer readable code means for causing said terminal (12) to display a graphic window that enables a user of said terminal (12) to choose from displaying an interactive broadcast information page (8), which is received by said terminal (12) from a digital broadcasting system (31), directly after said window is closed by a user of said terminal (12) or at another occasion by request from said user; and computer readable code means for causing said terminal (12) to activate a presentation means (14) for displaying said broadcast information page (8).

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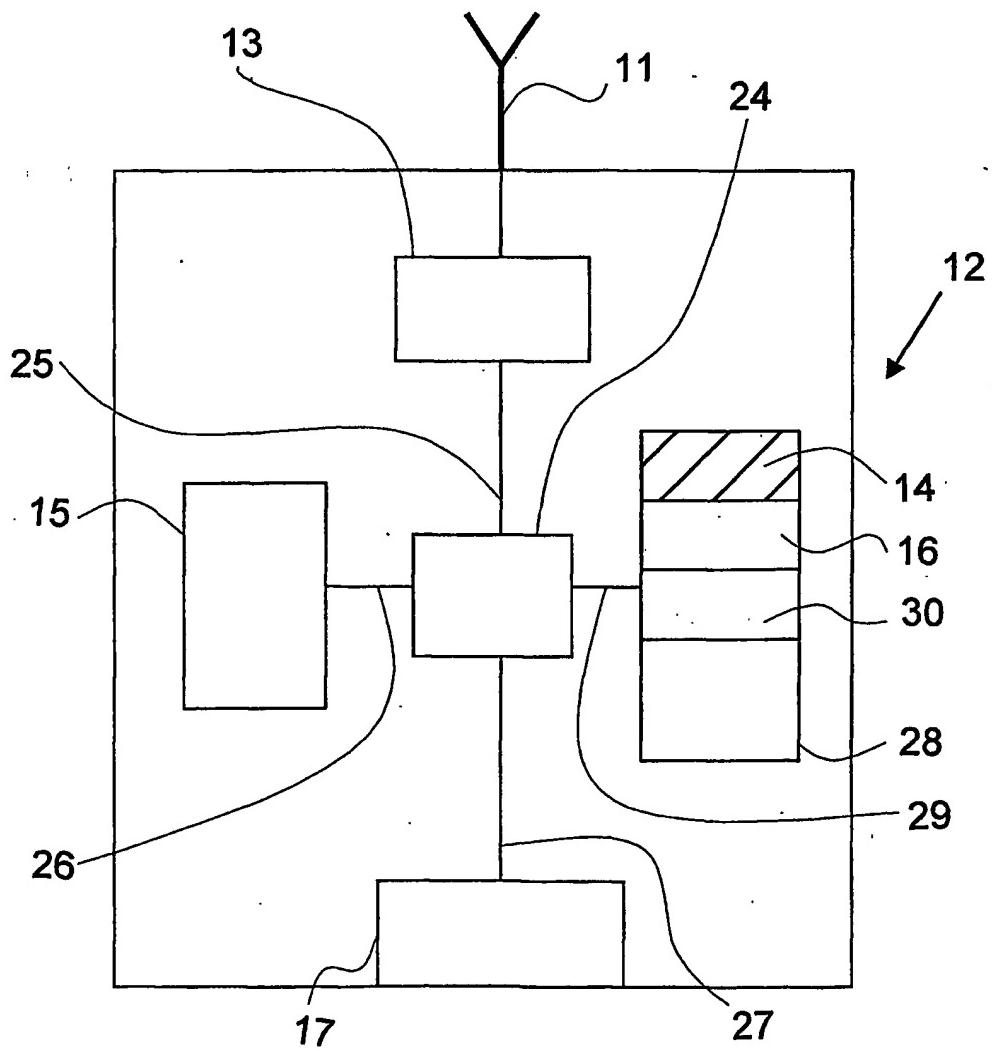
24. A computer program product (28) comprising a computer useable medium and a message computer program (16) according to claim 23, said message computer program (16) being recorded on said computer useable medium.

Fig.



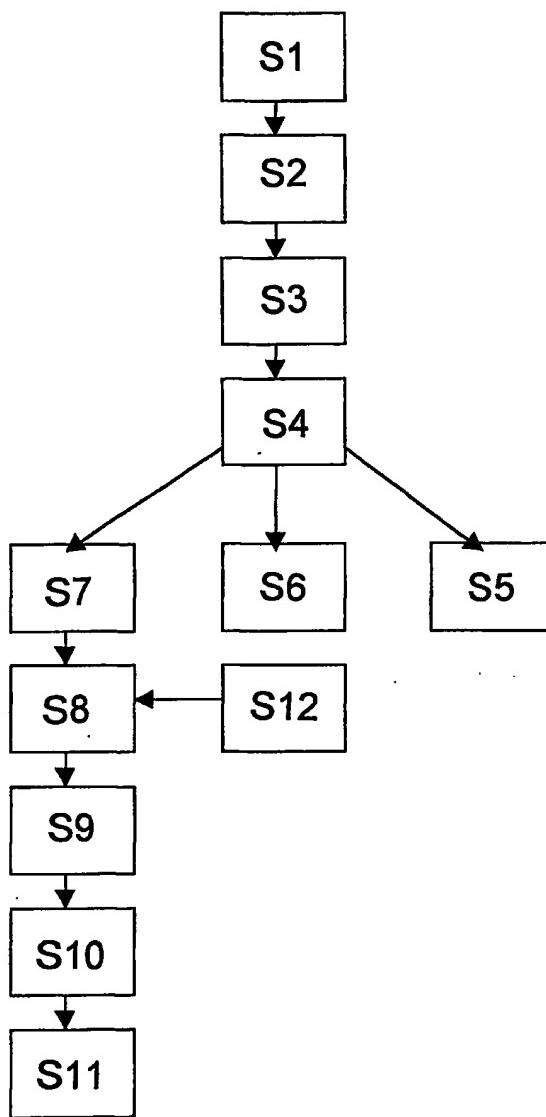
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Fig. 2



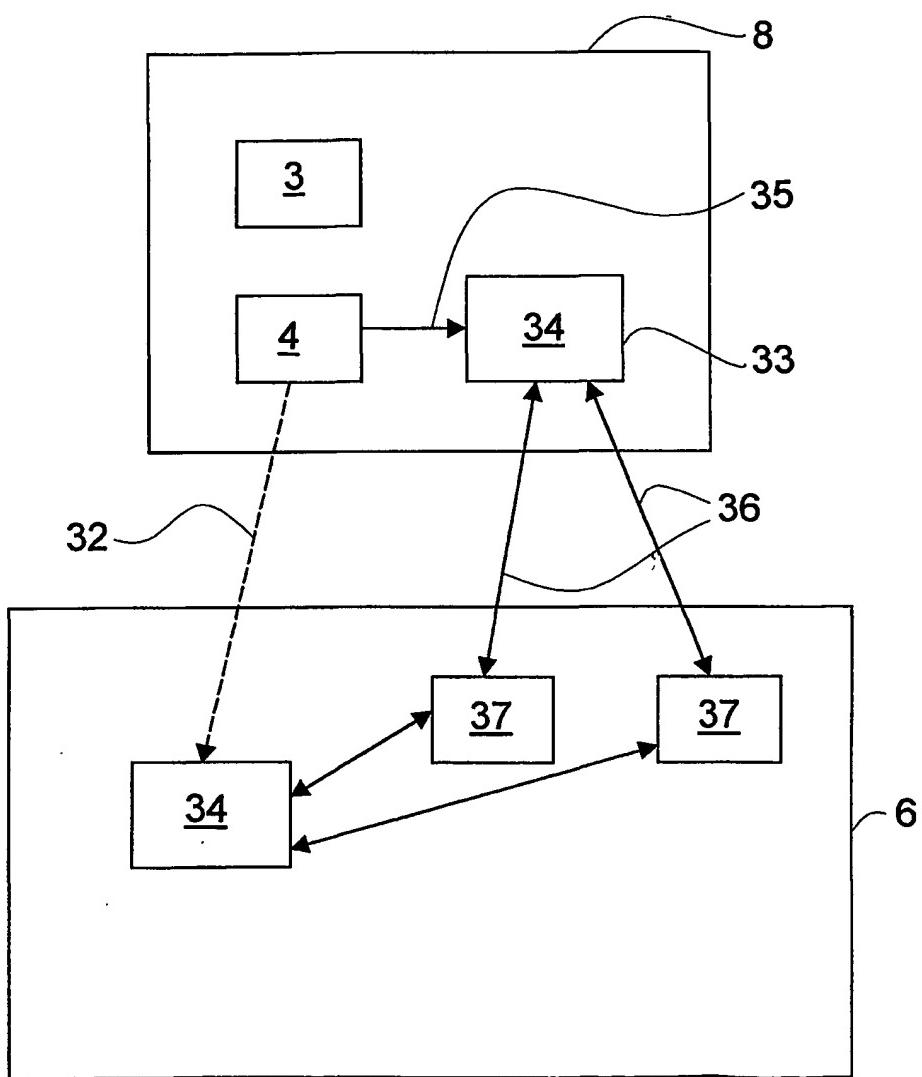
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**Fig. 3**



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Fig. 4



## INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 01/01669

## A. CLASSIFICATION OF SUBJECT MATTER

IPC7: H04H 1/00, H04Q 7/32

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: H04Q, H04L, H04H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 9727546 A1 (EX MACHINA, INC.), 31 July 1997 (31.07.97), page 48, line 30 - page 50, line 9, abstract	1,4-6,8
Y	---	2,3,7,9-24
Y	WO 9933076 A1 (TERACOM AB), 1 July 1999 (01.07.99), page 3, line 27 - page 15, line 17; page 21, line 9 - page 23, line 8, figure 2	2,3,7,9-24
P,X	WO 0065855 A1 (ROKE MANOR RESEARCH LIMITED), 2 November 2000 (02.11.00), the whole document	1,7-10
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 Further documents are listed in the continuation of Box C. See patent family annex.

\* Special categories of cited documents:

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"P" document published prior to the international filing date but later than the priority date claimed

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"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

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"&amp;" document member of the same patent family

Date of the actual completion of the international search

Date of mailing of the international search report

25 October 2001

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## INTERNATIONAL SEARCH REPORT

International application No. PCT/SE 01/01669
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## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0853287 A2 (NOKIA MOBILE PHONES LTD.), 22 December 1997 (22.12.97), column 2, line 3 - line 46  --	1-24
A	EP 0913974 A1 (SOHARD AG), 31 October 1997 (31.10.97), the whole document  --	1-24
A	WO 9907125 A1 (SIEMENS CORPORATE RESEARCH, INC.), 11 February 1999 (11.02.99), page 2, line 17 - line 33; page 4, line 4 - line 31; page 5, line 23 - page 6, line 24  -----	1-24

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Information on patent family members

01/10/01

International application No.

PCT/SE 01/01669

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